

NEWTEK
INCORPORATED

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AEROFLEX LABORATORIES, INC.

October 12, 1966

PICTORIAL INFORMATION DIGITIZER

PID 8

Mr. T. Nelson
Systems Consultant
Box 1546
Poughkeepsie, N. Y.

Dear Sir:

We appreciate your interest in our Pictorial Information Digitizer PID 8. Enclosed is a data sheet with full specifications for this equipment and a brief description of its performance and applications.

The Pictorial Information Digitizer opens new avenues in computer processing of graphic and pictorial information by providing a versatile "Off-Line" piece of equipment for scanning the millions of points which must be processed in a picture. It avoids tying up an expensive computer installation, abstracts the desired data points and provides an efficient magnetic tape input for the data processor.

We hope that this equipment will fill your pictorial information processing need and we look forward to discussing your specific application in the near future.

For your convenience, we are enclosing a self-addressed stamped reply card, which we hope you will complete and return to us in order that we may be of further service to you.

Thank you again for your interest.

Very truly yours,



HCB:cp
Encl.

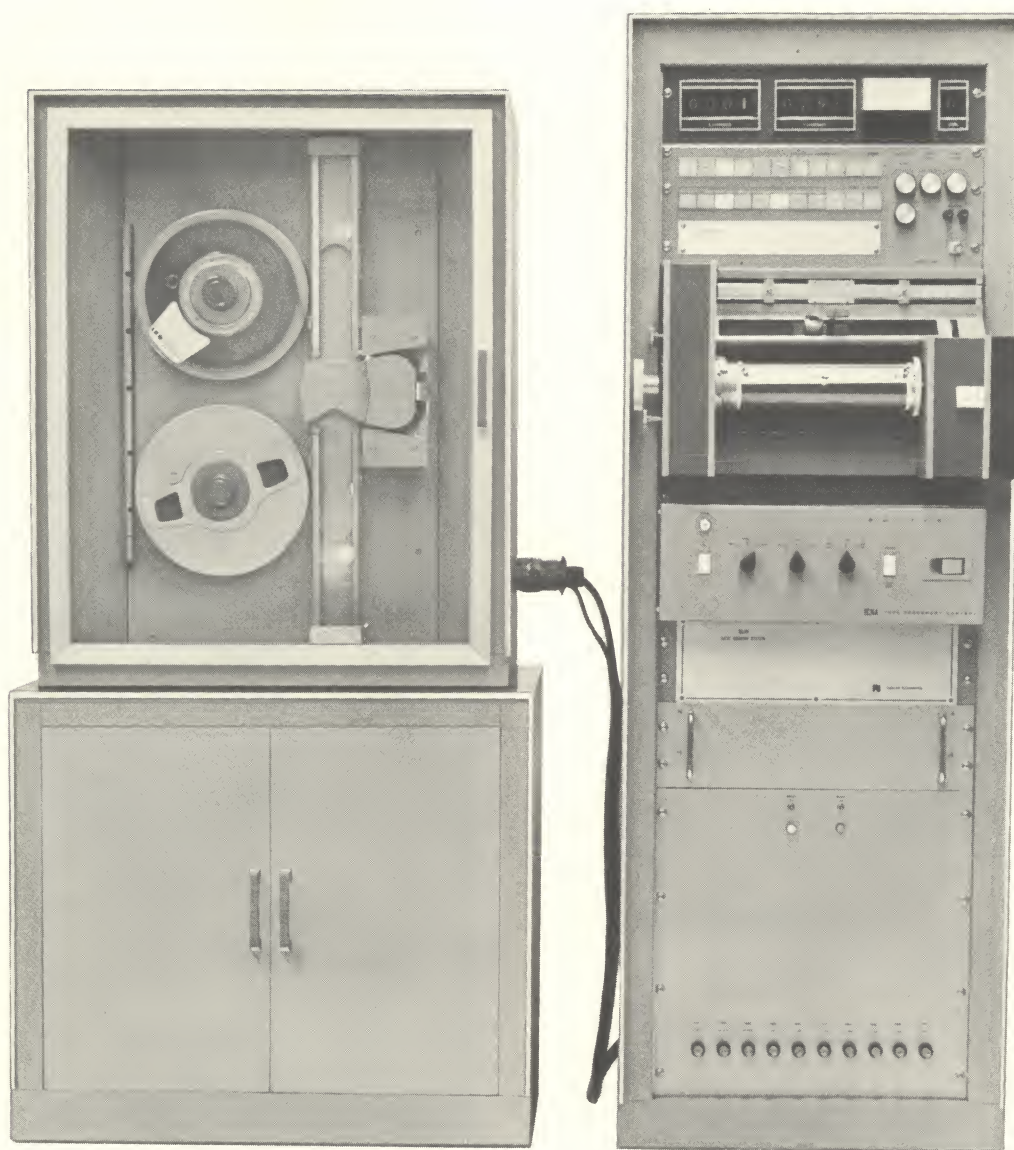
H. C. Bulow
Marketing Dept.

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DATA SHEET



PICTORIAL INFORMATION DIGITIZER PID 8

The Pictorial Information Digitizer, PID 8, is a fast, accurate and efficient instrument for digitizing pictorial and graphic source material for computer processing.

GENERAL

Newtek's PID-8 (Pictorial Information Digitizer) will translate pictorial source material into computer language and record it directly on computer tape, ready for data processing.

Graphic material and photography, both positive and negative, up to 8 x 10 inches in size, can be accommodated.

The PID 8 is particularly useful in digitizing graphics which have line structure information, such as oscillograms, graphs, drawings, spectrograms, streak photographs, seismograms, etc.

The recorded output of the PID 8 is on computer compatible magnetic tape. It includes photo density information plus X and Y coordinate data as referenced to coordinates on the original picture. The organization of the digital data allows for a minimum of computer processing time.

OPERATION

The source material is placed on a precision, rotating drum by means of a copy holder; the scanner axis is aligned with any straight line segment by means of an optical system. (For very high precision applications, a flat bed opto-electronic scanner is available.)

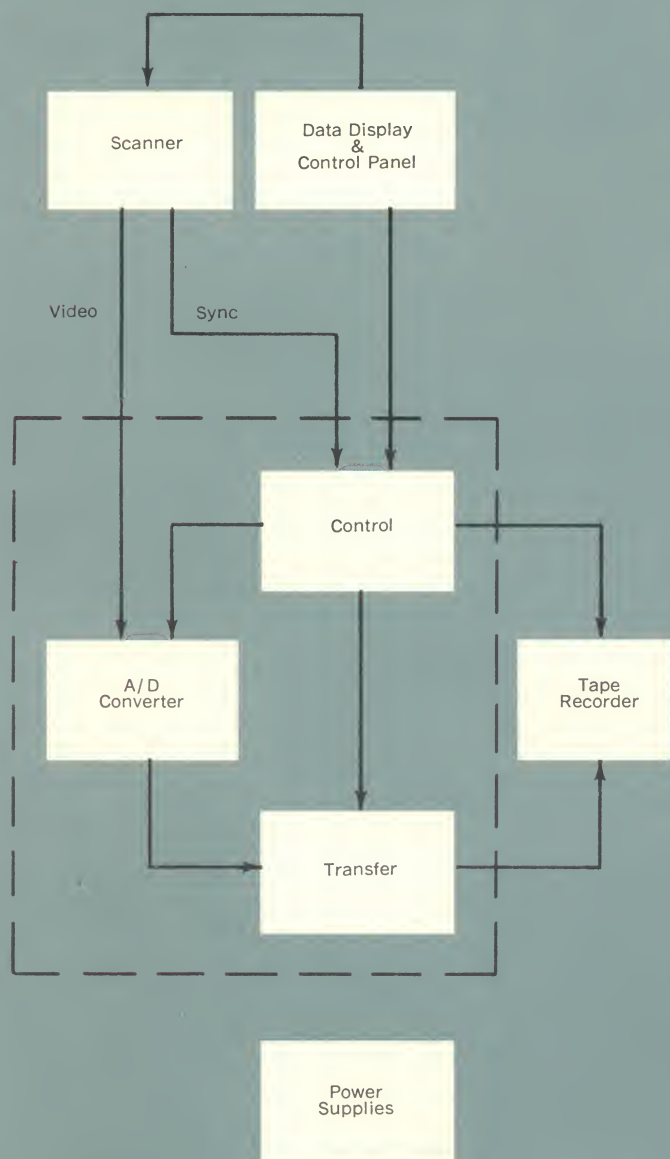
A set of push buttons provides selection of desired ranges of X and Y values or "window," in the source material within which encoding and digitizing will be performed. Therefore, undesired information outside of the area of interest is not processed and will not waste valuable computer time.

Newtek's PID 8 system can be selectively operated by means of push buttons in any of three modes.

- **Pictorial Mode**, for continuous tone images and photographs.
- **Line Mode**, for line images where line width is important, such as oscillograms.



PID OVERALL BLOCK DIAGRAM PICTORIAL MODE



- **Coordinate Mode**, for line images where line width is *not* important.

In the *pictorial* mode the density of all points in the window are encoded. A record gap is inserted in the tape format after every trace across the source material.

In the *line* mode, threshold selection is provided. Only information having reflectance or transmittance above the threshold (or below threshold for negative copy) will actuate the digitizer. Y coordinates are inserted for the point nearest the threshold for any sequence of points. X coordinates are recorded for any Y trace containing digitized information. The PID 8 tape format in the line mode is arranged for optimum efficiency. Only desired photographic density and coordinate information is recorded to achieve rapid computer processing at minimum cost.

The *coordinate* mode records only coordinate X and Y data and contains no density information.

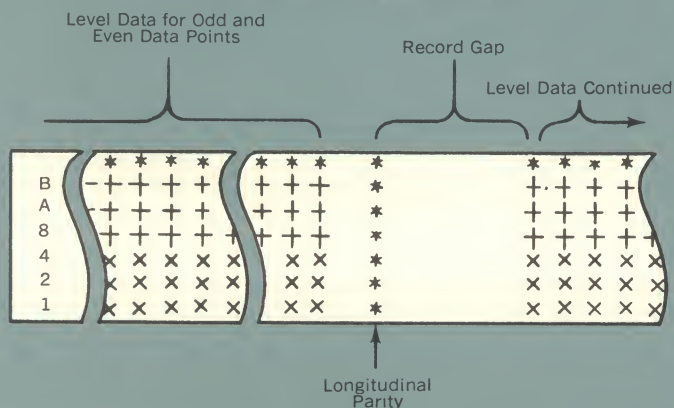
The coded and digitized information is accumulated in a buffer core storage. Readout from the buffer for recording on the tape is automatically actuated when sufficient information is present in the buffer. However, scanning, digitizing and storing of source material continues uninterrupted during buffer readout and tape recording. Selection of the readout threshold allows control of tape record length.

APPLICATION

The PID 8 is a versatile instrument which is particularly useful in digitizing and recording pictorial information from photographs, oscillograms, spectrograms, charts, mechanical drawings, curve traces, and many others. Its high precision, 0.002 inches resolution¹, flexible control of input data, high speed, and fully automatic operation bring new possibilities to the field of computer processing of graphic information.

¹Higher resolution systems are available to meet specific requirements.

PICTORIAL MODE TAPE FORMAT



Symbols: * Parity as Required + Even Data Points x Odd Data Points

SPECIFICATIONS

Input Material:

Photographic copy or Transparency, positive or negative

Maximum size: 8 x 10 inches

Format size continuously adjustable up to 8 x 10 inches.

Performance:

Digitized gray levels: Eight

Threshold selection: Four lowest gray levels

Scanning aperture size: Adjustable from 0.0005 to 0.006 in.

Resolution: 0.002 inches in both X and Y direction $\pm$ 10% non-cumulative over the full format size.¹

Accuracy: $\pm$ 0.002 inches over 10 inches.¹

Operating Modes:

Pictorial Records photographic densities of all coordinate points within the 8 x 10 inch format.

Line: Records photographic densities and X and Y coordinates of all points above threshold level.

Coordinate Mode: Records coordinates only for all points above threshold.

¹Higher resolution systems are available to meet specific requirements.

Options: 1) Keyboard entry for heading information. 2) Extended density encoding range up to 100 levels. 3) Flexible tape format control. 4) High density tape recorder (556 BPI). 5) Increased speed, resolution and accuracy models designed to meet specific requirements. 6) Metric scaling.

Operating Speeds:

Recording Speed: 50 inches per second at a tape density of 200 bits per inch.

Encoding Pictorial Mode: 0.54 inches/minute in X direction

Encoding Line Mode: 1.62 inches/minute in X direction

Tape Format:

7 channel IBM compatible tape format with $\frac{3}{4}$ inch record gaps. Record length adjustable from front panel. Transverse and longitudinal parity check bit.

Mechanical Dimensions:

Digitizer System: 20" wide x 24" deep x 65" high on rubber casters

Tape Recorder: 24" wide x 18" deep x 39" high for desk top installation

Electrical Specification: 105-125 VAC 60 cps single phase

Active Electronic Elements: Silicon semiconductors and integrated circuits on replaceable plug-in cards.

Environment: Temperature, humidity and dust for nominal industrial laboratory/office conditions.

Shipping Point: F. O. B. Westbury, New York

Contact Newtek, Inc. for your specific need in the field of digitizing pictorial information.

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P-

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